

CLAIMS

— 1. A method for performing a handover procedure for
a mobile station (MS) communicating in a communication
5 network and being movable therein,
said communication network comprising
a plurality of base transceiver stations being adapted
to perform a communication with said mobile station (MS)
within its coverage area,
said method comprising the steps of
processing (S3) location information related to the
mobile station (MS) and position information related to the
base transceiver stations (BTS 1A, BTS 1B, BTS 2, BTS 3),
deciding (S4) on the basis of the result of said
processing (S3), whether a first handover condition is
fulfilled,
designating (S9) a next base transceiver station in
said communication network, to which the communication with
said mobile station (MS) is to be directed from a current
base transceiver station, when the first handover condition
is fulfilled,
triggering a handover (S10) of the communication
connection of the mobile station (MS) from the current base
transceiver station to the next base transceiver station
designated in said designating step (S9), and
25 performing (S11) the handover.

— 2. A method according to claim 1, wherein
in said processing step (S3) at least one additional
30 parameter is processed together with said location
information related to the mobile station (MS) and position
information related to the base transceiver stations (BTS
1A, BTS 1B, BTS 2, BTS 3).

35 — 3. A method according to claim 2, wherein

said additional parameter is based on a signal quality.

5 - 4. A method according to claim 1, further comprising a
location information obtaining step (S2) comprising
a step of determining said location information
related to the mobile station (MS) and
a step of transmitting said determined location
information to a respective network device (BSC, MSC)
adapted to perform said processing step (S3).

10 - 5. A method according to claim 4, wherein said step of
determining said location information related to the mobile
station (MS) is executed in the mobile station (MS).

15 - 6. A method according to claim 4, wherein said step of
determining said location information related to the mobile
station (MS) is executed in a network element on the
network infrastructure side.

20 - 7. A method according to claim 4, wherein said step of
determining said location information related to the mobile
station (MS) is based on at least one of the following
methods:
25 locating by a global positioning system;
 locating by a time of arrival;
 locating by an observed time difference.

30 - 8. A method according to claim 4, wherein said location
information obtaining step (S2) is executed periodically.

35 - 9. A method according to claim 4, wherein said location
obtaining step (S2) is executed upon predetermined
occasions.

10 - 10. A method according to claim 9, wherein said predetermined occasion is a attachment procedure of the mobile station (MS) to the communication network.

15 5 - 11. A method according to claim 1, wherein, if the first handover condition is not fulfilled, the method further comprises the steps of checking (S5), whether a further measurement is to be performed,

20 10 - selecting (S6) a type of further measurement, if a measurement is to be performed,

15 15 - executing (S7) the measurement selected in said selecting step (S6),

20 20 - verifying (S8), whether a measurement result represents a second handover condition, and

25 25 - if the result of said verifying step (S8) represents the second handover condition, initiating execution of said target cell designation step (S9) for performing the handover (S10, S11).

30 30 - 12. A method according to claim 1, wherein said first handover condition is subscriber specific.

35 35 - 13. A method according to claim 1, wherein the coverage area of the base transceiver station designated in said designating step (S9) and to which the communication connection is to be directed (S10) is a coverage area adjacent to the coverage area of the current base transceiver station.

40 40 - 14. A method according to claim 1, wherein the coverage area of the base transceiver station designated in said designating step (S9) and to which the communication connection is to be directed (S10) is a coverage area not adjacent to the coverage area of the current base transceiver station.

15. A method according to claim 14, wherein the coverage area not adjacent to the coverage area of the current base transceiver station to which the communication connection is to be directed (S10) is known to the communication network.

16. A method according to claim 15, wherein the base transceiver station (BTS) with the coverage area not adjacent to the coverage area of the current base transceiver station, to which the communication connection is to be directed (S10), is a predetermined base transceiver station (BTS).

17. A method according to claim 16, wherein the position information of the predetermined base transceiver station (BTS) is stored in a subscriber identity module (SIM) or in the mobile station (MS).

18. A device for controlling a handover procedure for a mobile station (MS) communicating in a communication network and being movable therein,
said communication network comprising a plurality of base transceiver stations being adapted to perform a communication with said mobile station (MS) within its coverage area,
said device comprising
a processing means (2) for processing location information related to said mobile station (MS) and position information related to base transceiver stations (BTS), and for deciding on the basis of the result of said processing, whether a first handover condition is fulfilled,
a designating means (4) for designating a next base transceiver station in said communication network, to which the communication with said mobile station (MS) is to be

switched from a current base transceiver station, when the first handover condition is fulfilled, and

5 a triggering means (5) for triggering a handover of the communication connection of the mobile station (MS) from the current base transceiver station to the next base transceiver station designated by said designating means (4).

10 -- 19. A device according to claim 18, wherein in said processing means (2) at least one additional parameter is processed together with said location information related to the mobile station (MS) and position information related to the base transceiver stations (BTS 1A, BTS 1B, BTS 2, BTS 3).

15 -- 20. A method according to claim 19, wherein said additional parameter is based on a signal quality.

20 -- 21. A device according to claim 18, further comprising means (1) for determining location information related to the mobile station (MS) and for transmitting said determined location information to a respective network device (BSC, MSC) performing said processing.

25 -- 22. A device according to claim 21, further comprising a memory means (3) for memorizing location information related to the mobile station (MS) and position information related to the base transceiver stations (BTS),

30 -- 23. A device according to claim 21, wherein said means (1) for determining location information related to the mobile station (MS) and for transmitting said determined location information to a respective network device (BSC, MSC)

- 21 -

performing said processing are located in the mobile station (MS).

5 24. A device according to claim 21, wherein said means (1) for determining location information related to the mobile station (MS) and for transmitting said determined location information to a respective network device (BSC, MSC) performing said processing are located in a network element on the network infrastructure side.

10 25. A device according to claim 21, wherein said means (1) for determining the location information related to the mobile station (MS) is adapted to perform said determination according to at least one of the following methods:

locating by a global positioning system;
locating by a time of arrival;
locating by an observed time difference.

15 26. A device according to claim 18, further comprising a measurement means (6) adapted to check, whether a further measurement is to be performed,

20 25 select a type of further measurement, if a measurement is to be performed,

execute the selected measurement,

verify, whether a measurement result represents a second handover condition, and

30 20 if said second handover condition is verified, forwarding the measurement result to said handover condition processing means (2) for performing the handover.

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